FUTURE FISHERIES IMPROVEMENT PROGRAM
GRANT APPLICATION
(please fill in the highlighted areas)

I. APPLICANT INFORMATION

A. Applicant Name: Trout Unlimited

B. Mailing Address: 111 N. Higgins Ave, Suite 500

C. City: Missoula State: MT 59802

Telephone: (406) 541-1195 E-mail: rroberts@tu.org

D. Contact Person: Rob Roberts

Address if different from Applicant:

City: State: Zip:

Telephone: E-mail:

E. Landowner and/or Lessee Name (if other than Applicant): JB Yonce/United States Forest Service

Mailing Address: 5501 Rattlesnake Drive

City: Missoula State: MT Zip: 59802

Telephone: (406) 544-1485 E-mail:

II. PROJECT INFORMATION*

A. Project Name: Williams Diversion Fish Screen

River, stream, or lake: Rattlesnake Creek

Location: Township: 13N Range: 19W Section: 02
Latitude: 46.919317° Longitude: -113.961711° *within project (decimal degrees)*

County: Missoula

B. Purpose of Project:

The Williams Diversion Fish Screen Project is intended to eliminate salmonid entrainment on a small irrigation ditch on Rattlesnake Creek, improve upstream fish passage, and increase access to existing side-channel habitat.

C. Brief Project Description:

The Williams ditch is a 1.9 mile long irrigation ditch that diverts water from Rattlesnake Creek from May to October. Rattlesnake Creek is a primary spawning tributary for both native bull trout and westslope cutthroat, as well as fluvial rainbow and brown trout from the Clark Fork River. The Williams Ditch is the second most upstream ditch of the six diversions on Rattlesnake Creek, and is located on the east side of the creek approximately 1,000 feet downstream of a trailhead in the Rattlesnake Recreation Area. The ditch has 11 known water rights holders for a total allocated flow of 0.7 cfs. The diversion consists of a rock weir, step-pool structure on Rattlesnake creek that was built in 1998 and a timber headgate. About 500 feet downstream from the headgate, the ditch has a Brencail screen that was installed by Montana FWP and the Lolo National Forest in the early 2000s. An additional timber headgate and culvert are in place at the head of the screen to control flow. Downstream of the screen, a portion of the water diverted at the headgate continues down the ditch, and the remainder returns to the creek in an existing overflow channel. At peak flow, the screen is observed to flood, with the water level about 4" higher than the top of the screen walls. The screen is undersized, creating a potential for water to cut into the sides of the bank and flow around the screen. The function of the screen is thus impaired and potentially fails to prevent fish entrainment. When the screen was installed, it was intended as a temporary fix and has remained for almost 15 years.

This project involves removing the existing screen and installing a new Coanda screen and return channel for bypass flow. The modern, properly-sized structure will both prevent fish entrainment and facilitate upstream fish passage for migratory fish into the upstream portions of the ditch, which effectively functions as a side channel. The new structure will be located just downstream of the existing structure. Though the impact of the installation will be relatively minimal, the sites will be revegetated with native shrubs and grasses to stabilize the banks, improve riparian habitat, and enhance area. At the site of the fish screen removal, the channel will be reconstructed to repair any damage from the removal or from the cumulative effects resulting from the undersized screen.

A preliminary site survey and design was completed in the spring of 2016. Final design work is currently in progress. Please see attached construction plans. The screen is planned to be installed in October 2016.

D. Length of stream or size of lake that will be treated: 25 ft

E. Project Budget:

Grant Request (Dollars): $ 10,000

Contribution by Applicant (Dollars): $ 5,930 In-kind $ 1400

(salaries of government employees are not considered as matching contributions)

Contribution from other Sources (Dollars): $ 2000 In-kind $

(attach verification - See page 2 budget template)

Total Project Cost: $ 19,330

F. Attach itemized (line item) budget – see template

G. Attach specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support and fish biologist support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete supplemental questionnaire (fwp.mt.gov/habitat/futurefisheries/supplement2.doc).

H. Attach land management and maintenance plans that will ensure protection of the reclaimed area.

III. PROJECT BENEFITS*

A. What species of fish will benefit from this project?:

Past surveys in Rattlesnake Creek ditches have found entrained bull trout, westslope cutthroat trout, rainbow trout, brook trout, brown trout, and mountain whitefish. This project will prevent these species from becoming entrained in the Williams ditch and will improve upstream fish passage.

B. How will the project protect or enhance wild fish habitat?:

The lower reach of Rattlesnake Creek was historically braided with abundant side channels used by salmonids for spawning and rearing. The Williams ditch mimics these types of natural side channels, and the project will allow for wild fish to use the channel more effectively. The properly-sized screen will prevent fish from becoming stranded in the ditch and allow them to return to Rattlesnake Creek via the existing overflow channel. The fish screen bypass will allow for fish to move safely upstream from Rattlesnake Creek and make use of the improved side channel habitat.

C. Will the project improve fish populations and/or fishing? To what extent?:

Yes. The project will prevent fish from being lost down the Williams Ditch and increase spawning habitat access, thus having a positive impact on fish populations and fishing.

D. Will the project increase public fishing opportunity for wild fish and, if so, how?:

Yes. The project will prevent entrainment and increase spawning habitat for salmonids, which will directly improve fishing in the Rattlesnake Watershed. The public will have access to the site and the surrounding areas due to its location within the Rattlesnake Recreation Area.

E. The project agreement includes a 20-year maintenance commitment. Please discuss your ability to meet this commitment.

The screen will need to be kept clear of debris to ensure proper function. Water users on the ditch have maintained the existing Brencail screen for nearly 15 years. Trout Unlimite will visit the screen on a regular basis to ensure that it is functioning properly and to clean the screen, if necessary.

F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?:

Rattesnake Creek has been heavily impacted by channelization and loss of riparian habitat complexity and vegetation due to urban development in the lower Rattlesnake Valley over the past several decades. While this project will not directly correct the causes of habitat degradation, it will mitigate the effects by improving fish populations and by increasing access to habitat that performs the same functions as a natural side channel.

G. What public benefits will be realized from this project?:

The project is located in the Rattesnake Recreation Area, a popular recreation area on the outskirts of Missoula. Replacement of the undersized screen prevent flooding around the screen and revegetation efforts will prevent bank erosion and enhance the asthetics of the area, improving public safety and enjoyment. Local and visiting anglers will benefit from the improved fishery.

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

No. The irrigation ditch's ability to provide existing water rights will be maintained.

I. Will the project result in the development of commercial recreational use on the site?: (explain):

No.

J. Is this project associated with the reclamation of past mining activity?:

No.

Each approved project sponsor must enter into a written agreement with the Department specifying terms and duration of the project.

IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature:  Date: 5/26/2016

Sponsor (if applicable):

***Highlighted boxes will automatically expand.**

Mail To: **Montana Fish, Wildlife & Parks**
Habitat Protection Bureau
PO Box 200701
Helena, MT 59620-0701

E-mail To: **Michelle McGree**
mmcgree@mt.gov
(electronic submissions MUST be signed)

Incomplete or late applications will be rejected and returned to applicant.
Applications may be rejected if this form is modified.

*****Applications may be submitted at anytime, but must be signed and received by the Future Fisheries Program office in Helena before December 1 and June 1 of each year to be considered for the subsequent funding period.*****

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FUTURE FISHERIES REQUEST	IN-KIND SERVICES**	IN-KIND CASH	TOTAL
Personnel* **								
Survey	10	hour	$75.00	$ 750.00			750.00	$ 750.00
Engineering	40	each	$100.00	$ 4,000.00			4,000.00	$ 4,000.00
Permitting	4	hour	$50.00	$ 200.00		200.00		$ 200.00
Oversight	32	hour	$50.00	$ 1,600.00	400.00	1,200.00		$ 1,600.00
				$ -				$ -
			Sub-Total	$ 6,550.00	$ 400.00	$ 1,400.00	$ 4,750.00	$ 6,550.00
Travel								
Mileage				$ -				$ -
Per diem				$ -				$ -
			Sub-Total	$ -	$ -	$ -	$ -	$ -
Construction Materials** **								
Native tree container stock	20	each	$10.00	$ 200.00			200.00	$ 200.00
Native grass seed mix	5	lbs	$12.00	$ 60.00			60.00	$ 60.00
Fabricated Fish Screen	1	each	$5,000.00	$ 5,000.00	5,000.00			$ 5,000.00
Fabricated Screen Cover	1	each	$1,000.00	$ 1,000.00	1,000.00			$ 1,000.00
Structural fill delivered	2	cubic yards	$110.00	$ 220.00			220.00	$ 220.00
10" pipe	25	feet	$15.00	$ 375.00			375.00	$ 375.00
				$ -				$ -
				$ -				$ -
			Sub-Total	$ 6,855.00	$ 6,000.00	$ -	$ 855.00	$ 6,855.00
Equipment and Labor								
Labor	12	hour	$37.50	$ 450.00			450.00	$ 450.00
Screen Delivery	1	each	$350.00	$ 350.00			350.00	$ 350.00
Mini Excavator	20	hour	$85.00	$ 1,700.00	1,700.00			$ 1,700.00
Skid Steer	20	hour	$95.00	$ 1,900.00	1,900.00			$ 1,900.00
Dump Hopper	2	day	$200.00	$ 400.00			400.00	$ 400.00
Compactor	1	day	$125.00	$ 125.00			125.00	$ 125.00
			Sub-Total	$ 4,925.00	$ 3,600.00	$ -	$ 1,325.00	$ 4,925.00
Mobilization								
Mobilization	1	each	$1,000.00	$ 1,000.00			1,000.00	$ 1,000.00
			Sub-Total	$ 1,000.00	$ -	$ -	$ 1,000.00	$ 1,000.00
			TOTALS	$ 19,330.00	$ 10,000.00	$ 1,400.00	$ 7,930.00	$ 19,330.00

*Units = feet, hours, inches, etc. Please do not use lump sum.

**Can include in-kind materials. Justification for in-kind labor (e.g. hourly rates used for calculations). Describe here or in text: Costs for the following items were estimated using a similar project on the Hughes-Fredline Ditch, which was completed in 2015 and funded in part by a Future Fisheries Grant: Survey, Labor, abricated Fish Screen, Fish Screen Cover, Screen Delivery, Mobilization, Mini-Excavator, Skid Steer, Dump Hopper, Compactor, Rock, and Plants.

Reminder: Government salaries cannot be used as in-kind match

***The Review Panel suggests that design and oversight costs associated with a proposed project not exceed 15% of the total project budget. If design and oversight costs are in excess of 15%, applications must include a minimum of two competitive bids for the cost of undertaking the project

****The Review Panel recommends a maximum fencing cost of $1.50 per foot

MATCHING CONTRIBUTIONS (do not include requested funds)

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL	Secured? (Y/N)
WestSlope Chapter Trout Unlimited	$ -	$ 5,930.00	$ 5,930.00	Y
Trout Unlimited	$ 1,400.00	$ -	$ 1,400.00	Y
Northwestern Energy	$ -	$ 2,000.00	$ 2,000.00	Y
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
TOTALS	$ 1,400.00	$ 7,930.00	$ 9,330.00	

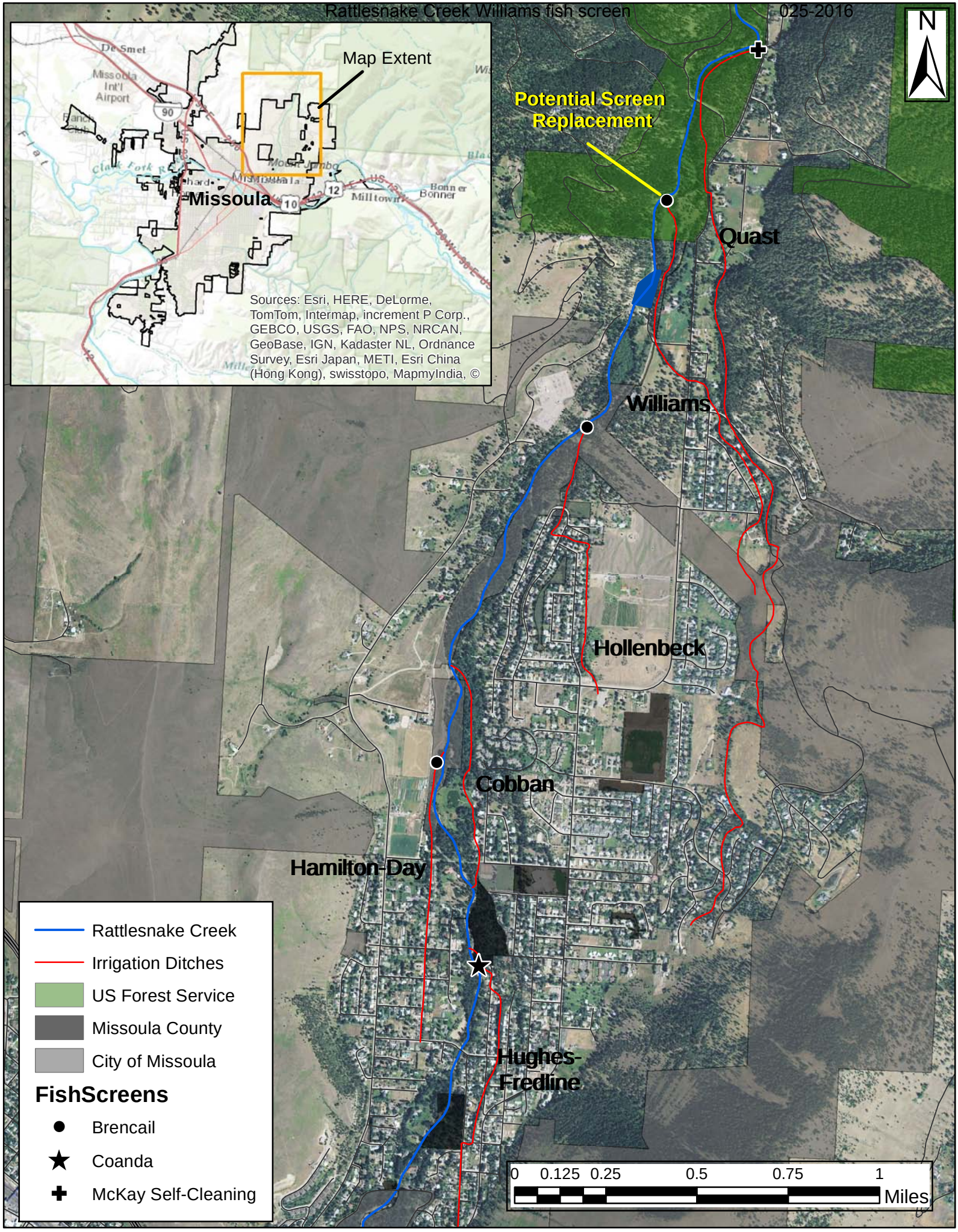

Rattlesnake Creek Williams fish screen
025-2016
N
Map Extent
Missoula
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, ©
Potential Screen Replacement
Quast
Williams
Hollenbeck
Cobban
Hamilton-Day
Hughes-Fredline
Rattlesnake Creek
Irrigation Ditches
US Forest Service
Missoula County
City of Missoula
FishScreens
Brencail
Coanda
McKay Self-Cleaning
0 0.125 0.25 0.5 0.75 1
Miles

Figure 1. Williams ditch below existing Brencail fish screen

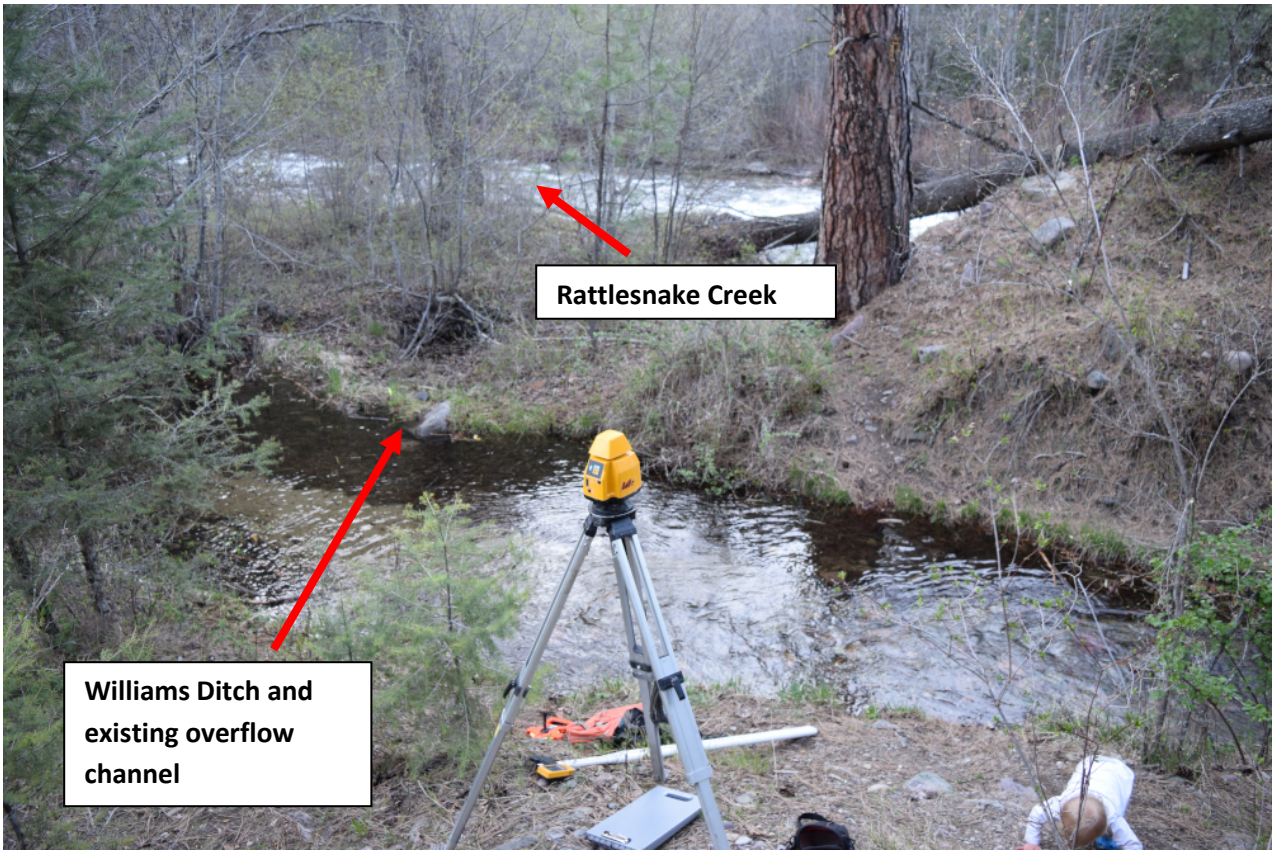


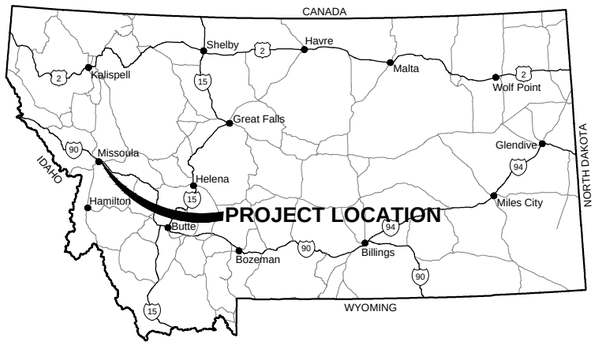
Figure 2. Williams Ditch below existing Brencail fish screen

Figure 3. Existing Brencail screen observed during high flow. The water is overflowing 4" higher than the top of the screen. This screen will be removed and replaced with a properly sized, modern fish screen.

Figure 4. Existing Brencail screen observed during high flow.

Figure 5. The new Coanda screen will be installed near the existing Brencail screen that will be removed. Bypass water will travel over the screen and into the existing overflow channel, allowing for upstream fish passage.

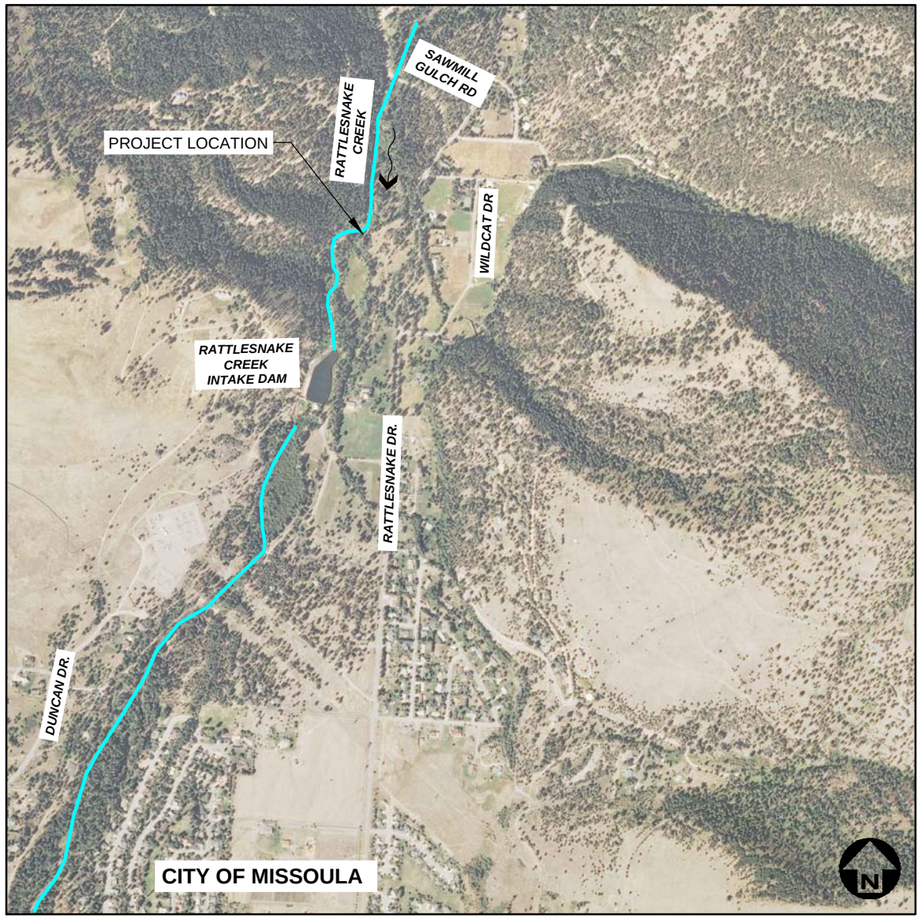
Figure 6. Screened water will continue down the Williams ditch.



TROUT UNLIMITED
WILLIAMS DITCH FISH SCREEN

CONSTRUCTION PLANS

PRELIMINARY LAYOUT



NOT TO SCALE

SHEET INDEX

PROJECT: 1-16127

DATE: MAY 20, 2016

PLANS PREPARED FOR:

TROUT UNLIMITED

PREPARED BY:

RYAN ELLIOTT, P.E.
GREAT WEST ENGINEERING

2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

PRELIMINARY

NO.	REVISION DESCRIPTION	BY	DATE
1			
2			
3			
4			
5			
6			

SET NO.

SHEET NO. 1

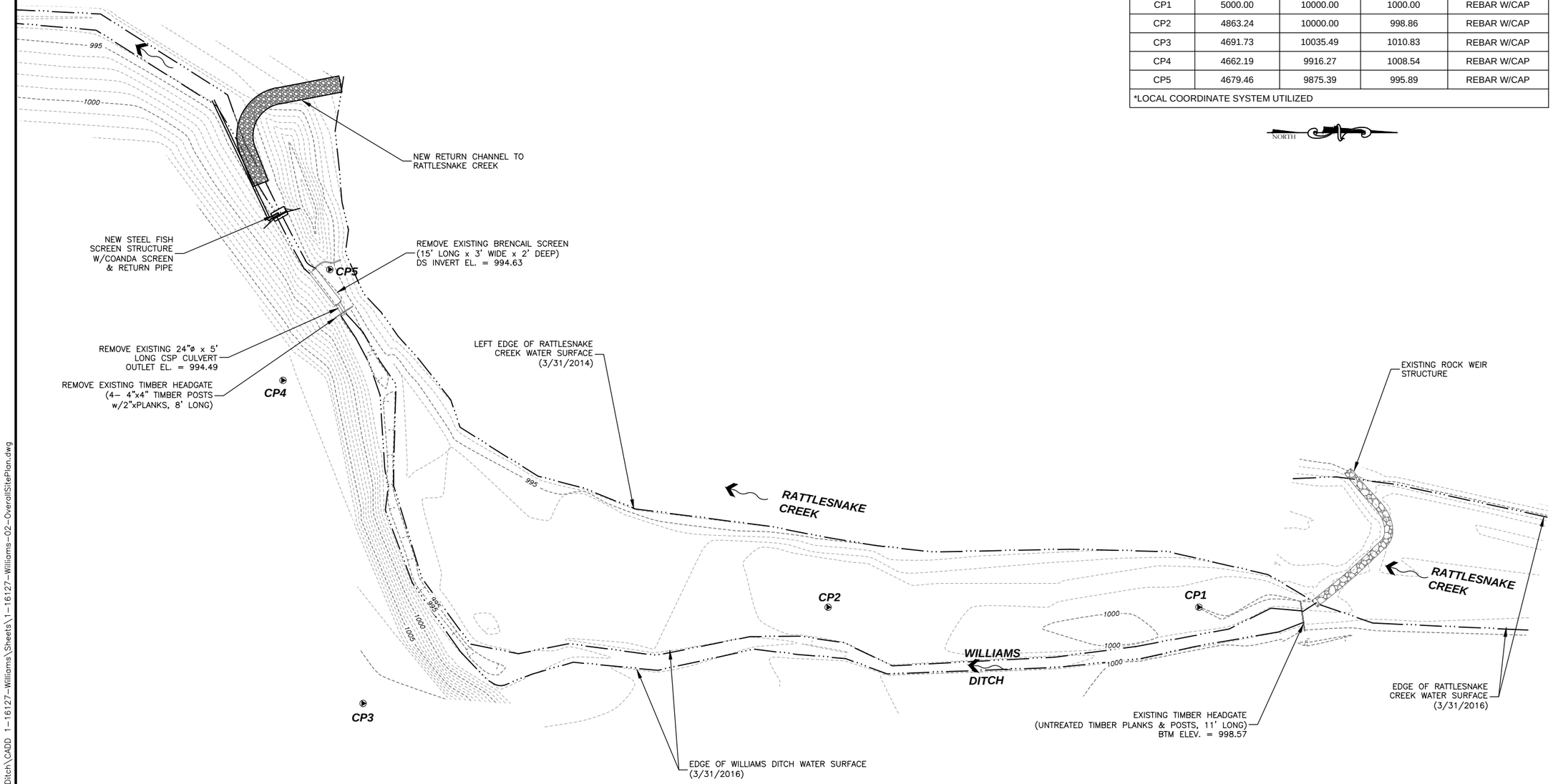
F:\1-16127-TU-Rattlesnake Creek Surveys\Williams Ditch\CADD 1-16127-Williams\Sheets\1-16127-Williams-01-Cover.dwg

CONTROL POINT COORDINATE TABLE*

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	5000.00	10000.00	1000.00	REBAR W/CAP
CP2	4863.24	10000.00	998.86	REBAR W/CAP
CP3	4691.73	10035.49	1010.83	REBAR W/CAP
CP4	4662.19	9916.27	1008.54	REBAR W/CAP
CP5	4679.46	9875.39	995.89	REBAR W/CAP

*LOCAL COORDINATE SYSTEM UTILIZED

NORTH



OVERALL SITE PLAN & CONTROL DIAGRAM

0 20 40

SCALE IN FEET

PRELIMINARY LAYOUT

NO.	REVISION DESCRIPTION	BY	DATE
1			
2			
3			
4			
5			

PROJECT: 1-16127
DESIGNED: RME
DRAWN: RME
CHECKED: JJT
APPROVED: RME
DATE: MAY 20, 2016

GreatWest engineering©
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

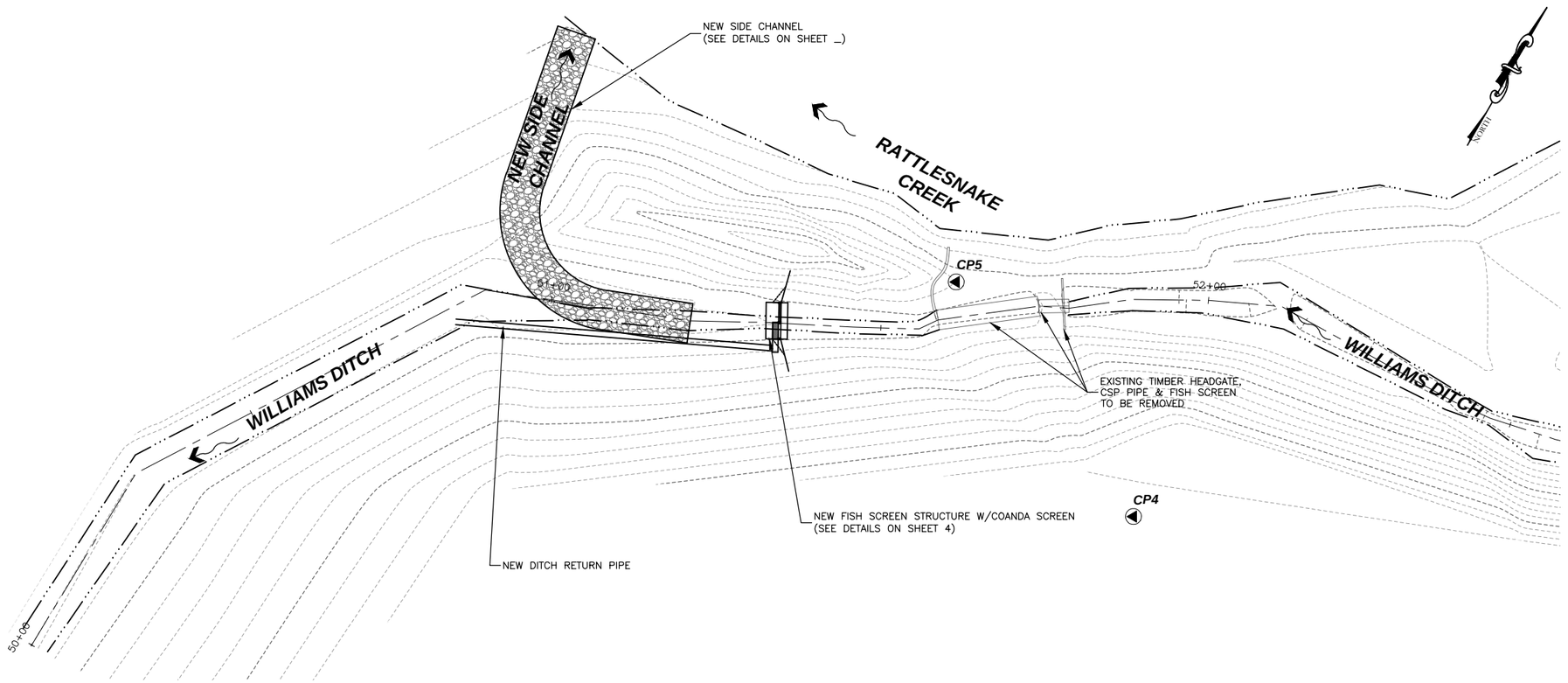
TROUT UNLIMITED

WILLIAMS DITCH FISH SCREEN

OVERALL SITE PLAN

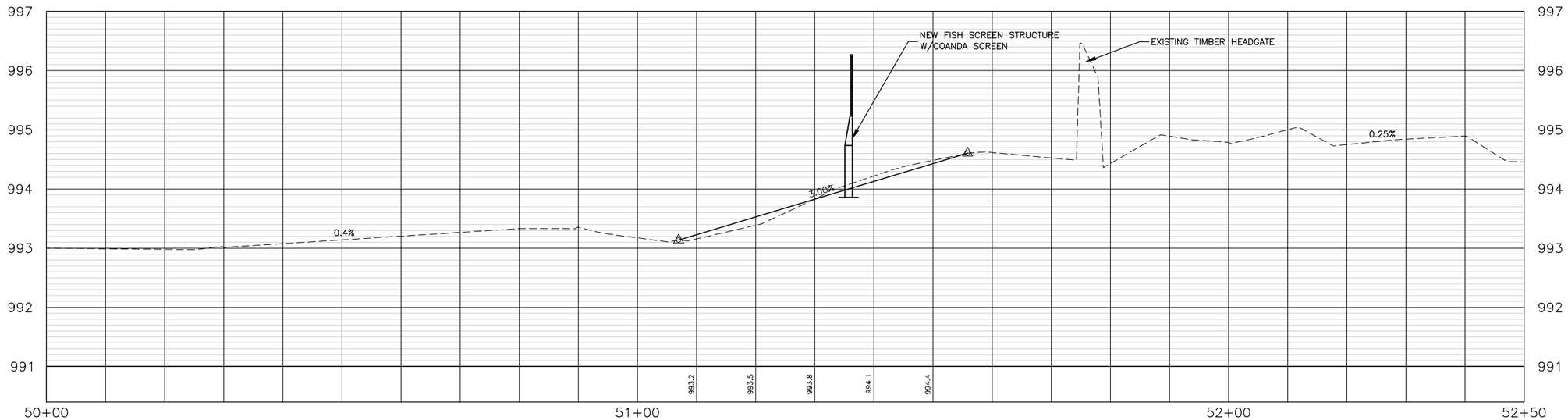
SHEET NO.
2
OF 4

F:\1-16127-TU-Rattlesnake Creek Surveys\Williams Ditch\CADD 1-16127-Williams\Sheets\1-16127-Williams-02-OverallSitePlan.dwg



PLAN VIEW OF WILLIAMS DITCH - STA. 50+00 TO STA. 52+50

0 10 20
SCALE IN FEET



PROFILE VIEW OF WILLIAMS DITCH - STA. 50+00 TO STA. 52+50

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

PRELIMINARY LAYOUT

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-16127
DESIGNED: RME
DRAWN: RME
CHECKED: JJT
APPROVED: RME
DATE: MAY 20, 2016

GreatWest engineering©
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

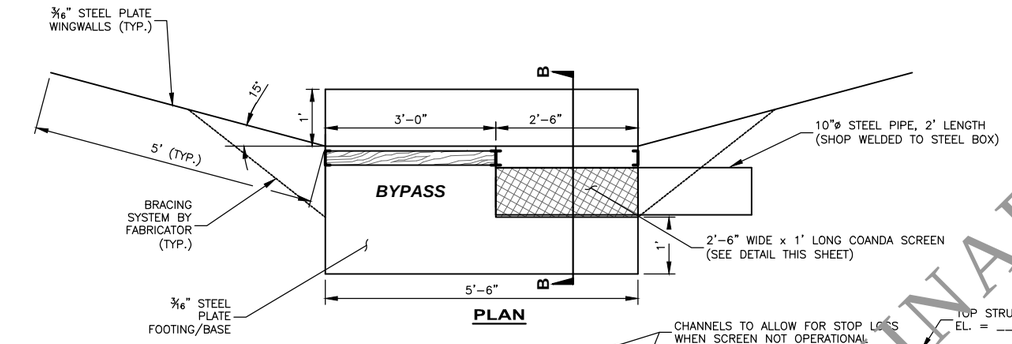
TROUT UNLIMITED

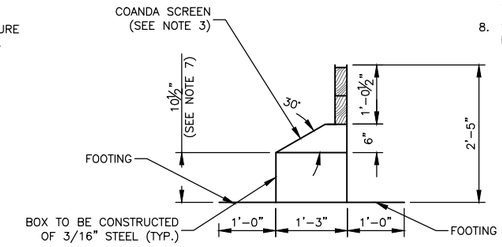
WILLIAMS DITCH FISH SCREEN

FISH SCREEN & DITCH RETURN

SHEET NO.
3
OF 4

F:\1-16127-TU-Rattlesnake Creek Surveys\Williams Ditch\CADD 1-16127-Williams\Sheets\1-16127-Williams-03-FishScreenPP.dwg





FISH SCREEN NOTES:

1. FISH SCREEN COANDA DESIGN:
   AT 4 CFS, WS EL. = _____
   AT 3 CFS, WS EL. = _____
   AT 2 CFS, WS EL. = _____
2. ALL PLATE STEEL SHALL BE 3/16" THICK.
3. COANDA SCREEN SHALL BE ___ MM OPENING BETWEEN WIRES AND PHI ANGLE SHALL BE ___ DEGREES. COANDA SCREEN MUST BE A BOLTED CONFIGURATION TO ALLOW FOR SCREEN REMOVAL. STAINLESS STEEL PLATE SHALL ALSO BE PROVIDED FOR INSTALLATION WHEN COANDA SCREEN IS NOT OPERATIONAL.
4. FINISH GRADE ELEVATION SHOWN ON SHEET __.
5. FABRICATOR TO PROVIDE SHOP DRAWINGS TO THE OWNER FOR REVIEW PRIOR TO FABRICATION.
6. ALL BRACING AND CONNECTIONS TO BE DESIGNED BY FABRICATOR.
7. DEPENDENT ON O.D. OF STEEL PIPE UTILIZED. FABRICATOR TO ADJUST AS NECESSARY (UP TO 11"). MAINTAIN PIPE INVERT ELEVATION.
8. STOP LOGS TO BE SUPPLIED ARE 2X MEMBERS, VARIABLE LENGTH AND HEIGHT. CHANNELS TO BE PROVIDED TO SUFFICIENTLY RETAIN LOGS.

FISH SCREEN DETAILS

SCALE: 3/8" = 1'–0"

VIEW OF SIMILAR FISH SCREEN LOOKING UPSTREAM

VIEW OF SIMILAR FISH SCREEN LOOKING DOWNSTREAM

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-16127
DESIGNED: RME
DRAWN: RME
CHECKED: JJT
APPROVED: RME
DATE: MAY 20, 2016

GreatWest engineering©
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

TROUT UNLIMITED
WILLIAMS DITCH FISH SCREEN
FISH SCREEN DETAIL

SHEET NO.
4
OF 4

F:\1-16127-TU-Rattlesnake Creek Surveys\Williams Ditch\CADD 1-16127-Williams\Sheets\1-16127-Williams-04-Fish Screen Dtl.dwg

Coanda Fish Screen - example
Hughes Fredline Ditch - Rattlesnake Creek

Montana Fish, Wildlife & Parks

3201 Spurgin Road
Missoula, MT 59804
Phone 406-542-5506
E-mail lknotek@mt.gov
Fax 406-542-5529

Memorandum

May 26, 2016

TO: Future Fisheries Review Panel

FROM: Ladd Knotek, Fisheries Biologist

RE: Williams Ditch Fish Screen Project on Rattlesnake Creek

Panel Members:

This memo is written in support of the Future Fisheries Improvement Program application for a fish screen on the Williams diversion off of Rattlesnake Creek in Missoula. The project application was submitted by Rob Roberts of Trout Unlimited, who is facilitating the project. We have sampled this ditch numerous times and found moderate densities of trout and other fish species near the head gate. Although the ditch was formerly screened by the U.S. Forest Service (in-ditch, manually cleaned trough screen), the screen capacity is inadequate and normal diversion rates overwhelm the screen. Thus, the current screen is ineffective for much of the irrigation season.

Rattlesnake Creek is an extremely important spawning tributary for the middle Clark Fork River. The stream supports viable fluvial bull trout and westslope cutthroat trout populations (upper reaches), as well as abundant migratory rainbow x cutthroat, brown trout and mountain whitefish populations in lower sections. Rattlesnake Creek provides a significant proportion of the trout recruitment to the Clark Fork River through Missoula. This stream is also unique in that >90% of the watershed lies on protected USFS Wilderness and National Recreation Area lands, while the lower main stem flows for 4.5 miles within the Missoula city limits.

The proposed project would complement recent restoration and enhancement efforts completed in the past 15 years on Rattlesnake Creek. Past projects (and funded Future Fisheries applications) have included several other fish screens on adjacent ditches in the lower watershed. This project is proposed on a ditch that has been prioritized for screening for some time. It will complement prior fish screen installations, as well as major fish passage and riparian protection efforts in this drainage.

I encourage you to strongly consider this application and please contact me if you would like more information.